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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,272	10/10/2003	Daniel Nicholas Crow	5437-65503	1729

24197 7590 10/23/2006

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EXAMINER	
VAN DOREN, BETH	

ART UNIT	PAPER NUMBER
3623	

DATE MAILED: 10/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/684,272	CROW ET AL.	
	Examiner	Art Unit	
	Beth Van Doren	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-4,6-16,18,33-35,38-48,50-53,67,68 and 72-88* is/are pending in the application.

4a) Of the above claim(s) *2-4,16,18,33-35,38-48 and 50-53* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *18,67,68 and 72-88* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The following is a non-final office action in response to communications received 08/07/2006. By this communication, Applicant has elected claims 18, 67-68, and 72-88 with traverse. Therefore, claims 2-4, 6-16, 33-35, 38-48, and 50-53 have been withdrawn from further consideration and claims 18, 67-68, and 72-88 are pending and addressed below.

Election/Restrictions

2. Applicant's election of claims 18, 67-68, and 72-88 in the reply filed on 08/07/2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Examiner points out that Applicant has not distantly and specifically pointed out the supposed errors in Examiner's actions. Applicant merely asserts that there is no serious burden in search and examination and that all the claims should be examined, without specifically and distinctly pointing out why and/or what the supposed errors in the Examiner's restriction are.

Response to Amendment

3. Applicant's amendments to the specification and drawings are sufficient to overcome the specification and drawing objections set forth in the office action of 09/27/05.

4. Applicant's cancellation of claims 17, 36, and 49 and amendment to claim 48 is sufficient to overcome the claim objections set forth in the office action of 09/27/05. Examiner notes that claim 48 has been withdrawn from further consideration.

5. Applicant's amendments and cancellations to the claims are sufficient to overcome the 35 USC § 112, second paragraph, rejections set forth in the office action of 09/27/05. Examiner notes that claims 1-16, 30-35, 38-53, and 64-66 have been withdrawn from further consideration at this time.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 18 and 72-76 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 18 recites "finding m job candidate points closest to the job candidate criteria point". It is unclear as to what, specifically, the language "the job candidate criteria point" is referring. For examination purposes, this language has been construed as -- the desired job candidate criteria point--. Clarification is required.

Claims 72-76 depend from claim 18 and are therefore also rejected based on the deficiencies set forth above.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 18, 67-68, and 72-88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sobotka et al. (U.S. 5,197,004) in view of Tunkelang (U.S. 2003/0120630).

As per claim 18, Sobotka et al. teaches a method for finding a plurality of job candidates suitable for a job requisition, the method comprising:

via at least one ontology-based extractor and at least one ontology-independent extractor, conceptualizing job candidate data for a plurality of job candidates to generate conceptualized job candidate data, wherein the conceptualized job candidate data comprises, for each job candidate, a set of concept scores defining a respective point in an n-dimensional concept space, the concept scores including concept scores for at least one job title, and at least one job skill for the job candidate, whereby the job candidates are represented by job candidate points in the n-dimensional concept space (See figures 5-7, column 3, lines 38-60, column 4, lines 29-50 and 56-67, column 5, lines 10-35 and 49-67, column 6, lines 29-45, wherein the job candidate data is conceptualized through an ontology-independent extractor (i.e. the apparatus that accepts and converts the resume into a series of ordered blocked of computer understandable character strings) and an ontology extractor (an extractor that uses a hierarchical knowledge base and word pattern recognition to extract relevant words and word groups). Using this parsed and extracted data, including the resume information of skills and job titles, the candidates are given scores. The concept score defines a point in n-dimensional concept space as the candidate data is conceptualized on multiple attributes to create a score).

receiving desired job candidate criteria, wherein the desired job candidate criteria comprises a desired job candidate criteria point in the n-dimensional concept space (See

abstract, column 4, lines 55-67, column 5, lines 1-20 and 59-66, column, lines 35-45, wherein the system has stored therein desired job candidate criteria (defined for job categories of the system) which comprise attributes of the category);

finding the job categories that are most applicable to the applicant whose resume is being analyzed and outputting in electronic format (See abstract, column 4, lines 50-67, column 5, lines 1-20 and 59-66, column 6, lines 35-55).

However, while Sobotka et al. discloses finding the job category or categories with desired criteria that most closely match the scores and attributes of the job candidate data, Sobotka et al. does not expressly disclose finding m job candidate points (i.e. multiple job candidates) closest to the desired job candidate criteria point in the n-dimensional concept space and in a graphical user interface, indicating job candidates associated with the m job candidate points as job candidates matching the desired job candidate criteria.

Tunkelang discloses finding m item points closest to the desired item criteria point in the n-dimensional concept space (where the items have multiple associated attributes/properties) and indicating items associated with the m items points as items matching the desired item criteria (See paragraphs 0017, 0019, 0052-4, 0165, 0203-4, 0262, 0272, wherein items have associated properties and items that are closest to the item are determined based on the distance between the two sets of properties. The system returns ordered items in terms of their distance to the reference item).

However, while Tunkelang discloses user interfaces (See paragraph 0272), Tunkelang does not expressly disclose a graphical user interface.

Both Tunkelang and Sobotka et al. disclose matching items with attributes (properties) to other items with attributes. Sobotka et al. specifically discloses being able to output the applicable matches in electronic format. Tunkelang discloses user interfaces. Graphical user interfaces are well known types of user interfaces used to output data efficiently in an electronic format. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a graphical user interface to electronically output the results of Sobotka et al. in order to more efficiently and accurately classify a job applicant by displaying such information to a recruiter using the system. See column 3, lines 35-50.

Furthermore, Sobotka et al. discloses conceptualizing job candidate data through an ontology-independent extractor (i.e. the apparatus that accepts and converts the resume into a series of ordered blocked of computer understandable character strings) and an ontology extractor (an extractor that uses a hierarchical knowledge base and word pattern recognition to extract relevant words and word groups). Using this converted and extracted data, the data including the resume attributes, the candidates are given scores based on the matches of the job category data and the job candidate's data. Tunkelang discloses distance functions being used to calculate the order of matching of items with a target item based on the number of attributes/properties in common. Tunkelang specifically discloses in paragraph 0272 that the distance function is applicable in any system that determines the distance (i.e. the number of similarities or intersections) between items. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the finding multiple job candidates closest to the desired job candidate criteria in order to more efficiently and accurately compute the

subset of employees that most closely match the desired criteria/properties. See Tunkelang, paragraphs 0017-9 and 0199, and Sobotka et al., abstract and column 3, lines 37-50, which disclose accuracy and efficiency of computation.

As per claim 67, Sobotka et al. teaches a computer-implemented method of finding a job candidate suitable to fill a position, the method comprising:

receiving characteristics desired to fill the position (See abstract, column 4, lines 55-67, column 5, lines 1-20 and 59-66, column, lines 35-45, wherein the system has stored therein desired job candidate criteria (defined for job categories of the system) which comprise attributes of the category); and

matching the characteristics desired to fill the position to a job candidate via an n-dimensional concept space, wherein the receiving and the matching steps are performed by a computer system (See figures 5-7, column 3, lines 38-60, column 4, lines 29-50 and 56-67, column 5, lines 10-35 and 49-67, column 6, lines 29-45, wherein the job candidate data is conceptualized. The concept score defines a point in n-dimensional concept space as the candidate data is conceptualized on multiple attributes to create a score. See also the abstract, column 4, lines 50-67, column 5, lines 1-20, column 6, lines 35-45).

However, while Sobotka et al. discloses matching the characteristics of a job category or categories with a job candidate, Sobotka et al. does not expressly disclose matching the characteristics desired to fill the position to a set of a plurality of job candidates.

Tunkelang discloses matching a set of a plurality of items to the desired item characteristics (where the items have multiple associated attributes/properties) and indicating the items (See paragraphs 0017, 0019, 0052-4, 0165, 0203-4, 0262, 0272,

wherein items have associated properties and items that are closest to the item are determined based on the distance between the two sets of properties. The system returns ordered items in terms of their distance to the reference item).

Both Tunkelang and Sobotka et al. disclose matching items with attributes (properties) to other items with attributes. Sobotka et al. discloses conceptualizing job candidate data and using this conceptualized data (which including the resume attributes) to give candidates scores based on the matches of the job category data and the job candidate's data. Tunkelang discloses distance functions being used to calculate the order of matching of items with a target item based on the number of attributes/properties in common. Tunkelang specifically discloses in paragraph 0272 that the distance function is applicable in any system that determines the distance (i.e. the number of similarities or intersections) between items. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include find a set of job candidates that match the desired characteristics in order to more efficiently and accurately compute the subset of employees that most closely match the desired criteria/properties. See Tunkelang, paragraphs 0017-9 and 0199, and Sobotka et al., abstract and column 3, lines 37-50, which disclose accuracy and efficiency of computation.

As per claim 68, Sobotka et al. teaches wherein the plurality of job candidates are represented by a plurality of job candidate representations in the n-dimensional concept space (See figures 5-7, column 3, lines 38-60, column 4, lines 29-50 and 56-67, column 5, lines 10-35 and 49-67, column 6, lines 29-45, wherein an extractor uses a hierarchical knowledge base and word pattern recognition to extract relevant words and word groups,

and uses this data that includes resume information like skills and job titles to give socres and place the information in n-dimensional concept space, as the candidate data is conceptualized on multiple attributes to create a score);

the characteristics desired to fill the position are represented by a point in the n-dimensional concept space (See abstract, column 4, lines 55-67, column 5, lines 1-20 and 59-66, column, lines 35-45, wherein the system has stored therein desired job candidate criteria (defined for job categories of the system) which comprise attributes of the category). However, Sobotka et al. does not expressly disclose that the matching is performed via a distance function to find the m job candidate representations closest to the point in the n-dimensional concept space.

Tunkelang discloses matching using a distance function to find m item representation points closest to the desired item point in the n-dimensional concept space (where the items have multiple associated attributes/properties) (See paragraphs 0017, 0019, 0052-4, 0165, 0203-4, 0262, 0272, wherein items have associated properties and items that are closest to the item are determined based on the distance between the two sets of properties. The system returns ordered items in terms of their distance to the reference item).

Both Tunkelang and Sobotka et al. disclose matching items with attributes (properties) to other items with attributes. Sobotka et al. discloses conceptualizing job candidate data and using this conceptualized data (which including the resume attributes) to give candidates scores based on the matches of the job category data and the job candidate's data. Tunkelang discloses distance functions being used to calculate the order of matching of items with a target item based on the number of attributes/properties

in common. Tunkelang specifically discloses in paragraph 0272 that the distance function is applicable in any system that determines the distance (i.e. the number of similarities or intersections) between items. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the finding multiple job candidates closest to the desired job candidate criteria in order to more efficiently and accurately compute the subset of employees that most closely match the desired criteria/properties. See Tunkelang, paragraphs 0017-9 and 0199, and Sobotka et al., abstract and column 3, lines 37-50, which disclose accuracy and efficiency of computation.

As per claim 72, Sobotka et al. teaches wherein the job candidate data comprises a resume of the job candidate (See column 3, lines 38-60, column 4, lines 20-40, column 5, lines 10-35, which discloses resume data concerning a job candidate).

As per claim 73, Sobotka et al. discloses wherein the job candidate data comprises resume data including degrees attained, experience (See column 2, lines 55-65, column 4, lines 40-50, column 5, lines 20-40, and column 6, lines 40-60, which discloses the degrees and education of the job candidate, as well as skill and aptitude information). However, Sobotka et al. does not expressly disclose, not does Tunkeland, assessment results of the job candidate.

Sobotka et al. discloses job candidate data including resume data, the resume data including degrees, skills, and aptitude data. It is old and well known in the art to include on a resume achievements and awards, those including certifications held by the applicant and ratings attained at previous jobs. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include assessments in the

resume data of Sobotka et al. in order to more accurately classify an applicant according to his/her potential based on data contained in his/her resume, such as aptitude, certifications, and ratings. See column 3, lines 38-60, and column 5, lines 10-40.

As per claim 74, Sobotka et al. discloses using at least one ontology-based extractor to conceptualize job candidate data for a plurality of job candidates (See figures 5-7, column 3, lines 38-60, column 4, lines 29-50 and 56-67, column 5, lines 10-35 and 49-67, column 6, lines 29-45, wherein the job candidate data is conceptualized through an ontology extractor (an extractor that uses a hierarchical knowledge base and word pattern recognition to extract relevant words and word groups)). Sobotka et al. further discloses a hierarchical data structure for a knowledge base that represents word patterns, with job categories, indicators, and buzzwords (See figure 2, column 3, lines 40-60, and column 4, line 55-column 5, line 35).

However, Sobotka et al. does not expressly disclose that extracting is performed based on detecting a synonym of the concept in the job candidate data. Tunkelang further does not expressly disclose detecting a synonym of the concept in the job candidate data.

Sobotka et al. discloses conceptualizing job candidate data through an ontology based extractor that uses a hierarchical knowledge base and word pattern recognition to extract relevant words and word groups. Examiner takes official notice that the use of synonyms in the knowledge base of ontology, in order to more efficiently capture concepts, is old and well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include synonyms in the ontology based extractor of Sobotka et al. in order to more efficiently and accurately

classify a candidate employee based on the data contained in his/her resume. See figure 2, column 3, lines 40-60, and column 4, line 55-column 5, line 35, of Sobotka et al.

As per claim 75, Sobotka et al. discloses wherein the concept scores are based at least in part on a level of experience for at least one of the concepts (See column 2, lines 55-65, column 4, lines 35-55, column 5, lines 20-37 and line 60-column 6, lines 1-10 and lines 47-62, wherein level of experience is considered in calculating a score).

As per claim 76, Sobotka et al. discloses concept scores that are based buzzwords and on strengths of the indicators contained in the candidate's data (See column 5, lines 50-67, and column 6, which disclose assessing scores based on strengths and thresholds). However, Sobotka et al. does not expressly disclose that indicator strength is specifically increased based at least in part on reputation of an organization at which an associated concept was applied according to the job candidate data. Tunkelang further does not expressly disclose increasing the score based on the reputation of an organization at which an associated concept was applied according to the job candidate data.

Sobotka et al. and Tunkeland are combinable for the reasons set forth above. Further, Sobotka et al. discloses conceptualizing job candidate data, the data related to resume information (such as job titles, degrees, etc.). Sobotka et al. further discloses assigning scores based on buzzwords and strength of indicators, as well as understanding of aptitude based on these buzzwords and indicators. Examiner takes official notice that it is old and well known to value experience and degrees differently based on the enterprise or university at which it is gained (for example some schools engineering departments are rated higher than other schools) in order to better select and assess job candidates. Therefore, it would have been obvious to one of ordinary skill in the art at

the time of the invention to include consideration of a reputation of an organization in the strengths of indicators of Sobotka et al. in order to more efficiently and accurately classify a candidate employee based on the data contained in his/her resume. See figure 2, column 3, lines 40-60, and column 4, line 55-column 5, line 35, of Sobotka et al.

Claim 77 recites equivalent limitations to claim 18 and is therefore rejected using the same art and rationale set forth above.

Claims 78-82 recite equivalent limitations to claims 72-76, respectively, and are therefore rejected using the same art and rationale set forth above.

Claim 82 recites equivalent limitations to claim 18, and is therefore rejected using the same art and rationale set forth above. Further discloses a system comprising memory for storing computer executable instructions and at least one processor operable in conjunction with the instructions stored in the memory for finding the plurality of job candidates suitable for the job requisition.

Claims 84-88 recite equivalent limitations to claims 72-76, respectively, and are therefore rejected using the same art and rationale set forth above.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Wical (U.S. 6,061,675) discloses using ontologies to link concepts and knowledge.

Gardner et al. (U.S 2006/0074836) teaches graphically displaying ontology data, including relationships between concepts.

Kurzius et al. (U.S. 6,385,620) discloses a candidate recruiting system that uses mapping functions to parse data and discover candidate qualification data.

Scarborough et al. (U.S. 7,080,057) discloses desired job performance data and selecting employees electronically using such data.

Dailey et al. (U.S. 6,917,952) teaches determining the similarity of two data objects, such as two resumes or job descriptions, using predictive models.

Sahimi et al. (U.S. 6,564,197) discloses using domain specific distance functions to match points based on attributes.

Mayer et al. (U.S. 2001/0034630) teaches matching profiles data in an employee system, including positions held, job experience, education level, etc.

Powers et al. (U.S. 6,513,027) discloses generating a knowledge base of hierarchically arranged categories, associating sets of themes to the categories, and processing content using the knowledge base.

Copperman et al. (U.S. 6,711,585) discloses concept nodes and determining distances between the nodes using functions.

Hurst et al. (U.S. 6,721,754) discloses a "space" being defined by a set of parameters and a distance function, wherein data of the system includes employee data.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Beth Van Doren whose telephone number is (571) 272-6737. The examiner can normally be reached on M-F, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on (571) 272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

bvd

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October 18, 2006

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